diameter of about 80 mm by thesintering. Additionally, the OH group concentration of the vitrified core rod is maintained at 0.8 ppb or less by weight ratio.

4) Core rod stretching step

This step is a step of heating and stretching the vitrified core rod. As shown in Fig. 2, the vitrified core rod 4 is stretched by using an electric furnace 14. The electric furnace 14 is filled with an inert atmosphere and temperatures thereof are set to about 1800 to 2000°C. In this state, both ends of the vitrified core rod 4 are gripped by chucks 15a and 15b. As the electric furnace 14 is elevated, the lower end chuck 15 is descended to increase the distance between the chucks 15a and 15b. Thereby, the vitrified core rod 4 is stretched and reduced in diameter.

By this stretching step the outer diameter of the vitrified core rod 4 is reduced from about 80 mm to 36 mm with the length of 2000 mm.

In Fig. 2, 14a denotes a heater and 16 denotes an outer diameter measuring device for measuring the outer diameter of the stretched core rod 4.

This step is conducted by using the electric furnace 14, for example. Since OH groups are not generated unlike the case of stretching by flame, the OH group concentration of the vitrified core rod 4 is not increased.

5) Second porous cladding forming step by VAD

This step is a step of depositing a second porous cladding around the stretched, vitrified core rod 4 by VAD. As shown in Fig. 3, the stretched, vitrified core rod 4 is rotatably held vertically. Then, a second burner 17 blows fine glass particles to form a second porous cladding 5 having an outer diameter of 250 mm.

The second cladding burner 17 is charged with fuel gases (oxygen and hydrogen, for example) and a source gas ($SiCl_4$, for example) and the fuel gases generate oxyhydrogen flame. The oxyhydrogen flame causes flame hydrolysis reaction in the source gas gushed out of the second cladding burner 17 to form fine glass particles for a second porous cladding 5.

The second cladding burner 17 elevates vertically on a straight line parallel to the vitrified core rod 4 and attaches the fine glass particles uniformly over the entire length of the vitrified core rod 4.

A synthetic rate of the second porous cladding 5 was 20 g/min under the following conditions. The synthetic conditions for the second porous cladding 5 are that hydrogen is set 200 slm (standard litter per minutes), oxygen is set 100 slm and $SiCl_4$ is set 70 g/min in one burner 17 and the elevating speed of the burner 17 is set 500mm/min.

As described above, this step can form the second porous cladding 5 extremely large at high speed.

In addition, the burner 17 used may be one burner, but

a plurality of burners allows synthesis at higher speed. Furthermore, the density distribution of porous bodies in the radius direction in the second porous cladding 5 can be controlled arbitrarily by changing the flow rates of fuels and sources, the elevating speed of the burner, and the revolutions of the vitrified core rod 4. The density distribution of the porous bodies is preferably such a density distribution that is reduced as becoming more distant from the vitrified core rod 4. With such density distribution, the following second cladding dehydrating step can be conducted efficiently.

6) Second cladding dehydrating step

This step is a step of dehydrating the above-mentioned second porous cladding 5 to reduce the OH group concentration in the second porous cladding 5 to not more than 50 ppm by weight ratio. The dehydrating step is conducted such that the second porous cladding 5 is heated and allowed to stand in an atmosphere of He mixed with chlorine at a temperature of about 1200°C, for example. The dehydrating step removes OH groups and impurities inside the second porous cladding 5 and reduces the OH group concentration to 50 ppm or less.

Additionally, in the previous step of forming the second porous cladding 5, when the density distribution of the porous bodies is obtained so as to efficiently conduct the dehydration, the OH group concentration can be reduced efficiently. That is, when the density distribution is so made that the density